

3. Questionnaire (パキスタン政府への質問票)

Questionnaire on Solid Waste Management:

This questionnaire has been designed to obtain basic information for the analysis of present situation of the solid waste management for your city. This questionnaire will be used for the project design of "Capacity Building for Solid Waste Management".

1. General data of the city

1.1 Name of the City

1.2 Area (in)

| | |
|----------------|--------|
| Urbanised area | Sq. Km |
| Rural area | Sq. Km |
| Total area | Sq. Km |

Explanation: The **area** refers to the physical area under the jurisdiction of the Municipality. Urbanised area should include all the settlements of urban nature irrespective of their legal status.

1.3 Population

| | 1995 | 2000 | 2005 |
|------------------------------|------|------|------|
| Population in urbanised area | | | |
| Population in rural area | | | |
| Total population | | | |

1.4 Climate

Monthly rainfall and annual rainfall (mm)

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| Rainfall | | | | | | | | | | | | | |

The above data refers to the period

Average air temperature (degree Celsius)

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Day | | | | | | | | | | | | |
| Night | | | | | | | | | | | | |

The above data refers to the period

1.5 Industrial Structure

| Name of Industry | Percentage of Employee (%) | Main Industry (Please describe name of industry) |
|---------------------------------|----------------------------|--|
| Agriculture, Fishery & Forestry | | |
| Mining & Manufacture | | |

| | | |
|-----------------------------|--|--|
| Service Industry & Commerce | | |
|-----------------------------|--|--|

1.6 Condition of Infrastructure (Coverage Rate)

| | Urban Area (%) | Rural Area (%) |
|--------------------------|----------------|----------------|
| Paved Road | | |
| Electricity | | |
| Water Supply | | |
| Sewerage and Septic Tank | | |

2 Department responsible for Municipal Solid Waste Management in your city

2.1 Name of the Department _____

2.2 Name, address and telephone number of Head of the Department

2.3 Master plan, law and regulations existing on the following items (please tick)

| Items | Yes | No | Remarks |
|--|-----|----|---------|
| On littering | | | |
| On storage of waste | | | |
| On user charges | | | |
| On registration of private contractors | | | |
| On Recycling | | | |
| On Land Expropriation | | | |
| Master plan of solid waste management | | | |
| On Environmental Impact Assessment | | | |

2.4 Functions of the Department (Including those functions contracted out by the Department)

| Functions borne by the Department | Yes | No | If no, please specify the responsible department |
|-----------------------------------|-----|----|--|
| Domestic waste management | | | |
| Commercial waste management | | | |
| Industrial waste management | | | |
| Street sweeping and grass cutting | | | |
| Park cleansing | | | |
| Public toilet cleansing | | | |
| Cemetery cleansing | | | |
| Crematorium service | | | |
| Cleansing of vacant lands | | | |

| Functions borne by the Department | Yes | No | If no, please specify the responsible department |
|--|-----|----|--|
| Drain cleansing | | | |
| River cleansing | | | |
| Removal of dead animals | | | |
| Removal of garden wastes | | | |
| Removal of construction wastes | | | |
| Removal of abandoned vehicles | | | |
| Removal of bulky wastes such as disused refrigerators | | | |
| Development/building plan approval (bin centres, refuse chutes etc.) | | | |
| 24 hour emergency work | | | |
| Procurement of vehicles | | | |
| Maintenance of vehicles | | | |
| Recruitment of personnel | | | |
| Training of personnel | | | |
| Others | | | |

2.5 Name of Relevant Department for Solid Waste Management

(Including extra-governmental organization, agency and private company contract with your city government)

3 Revenue of the City Council, and expenditure for MSWM

3.1 Revenue of the Council

| Revenue Source | 2005 | | 2006 | |
|----------------|----------|--------|----------|--------|
| | Budgeted | Actual | Budgeted | Actual |
| Assessment | | | | |
| License | | | | |
| Loan | | | | |
| Grant | | | | |
| User charge | | | | |
| Fine | | | | |
| Others | | | | |
| TOTAL | | | | |

3.2 Expenditure for the Municipal Solid Waste Management:

| Expenditure items | 2005 | | 2006 | |
|---|----------|--------|----------|--------|
| | Budgeted | Actual | Budgeted | Actual |
| Cleaning Service for Road and Channel | | | | |
| Collect and Transport the Garbage | | | | |
| Maintenance Cost for Landfill Site | | | | |
| Purchase Cost of Carriage for Garbage Collection and Transportation | | | | |
| Purchase Cost of Landfill Operation Vehicle | | | | |

4 Personnel for the Solid Waste Management (number of personnel by area and type):

4.1 The number of staff working for both solid waste management and in other services should be shown in parenthesis.

| Type of Personnel | Area of work | | | | | |
|--|--------------|----|----|----|---|-------|
| | A | CT | SG | FD | O | Total |
| Administrator | | | | | | |
| Health officer | | | | | | |
| (Senior) public health inspector | | | | | | |
| Engineer | | | | | | |
| PHO / Technical assistant / Technician | | | | | | |
| Clerical staff | | | | | | |
| Driver | | | | | | |
| Sweepers | | | | | | |
| Labourer | | | | | | |
| Total | | | | | | |

The above data is for the year

A = Administration; CT = Collection and transportation; SG = Street sweeping and grass cutting

FD = Final disposal; O = Others; PHO= Public health overseer

4.2 Staff Training for Solid Waste Management

| Name of Training | Target Group | Training Period (Days) | Frequency (times per year) |
|------------------|--------------|------------------------|----------------------------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

4.3 Organization chart for your city government

Please attach the organization chart of your city government. and please marking the relevant department / section of solid waste management.

5 Equipment

5.1 Machinery used in solid waste management

| Machine type | Total number | Number of machinery by condition | | |
|-------------------------------------|--------------|----------------------------------|------|------|
| | | Good | Fair | Poor |
| Compactor collector | | | | |
| Tipping truck with sliding covers | | | | |
| Open truck with tipping facility | | | | |
| Open truck without tipping facility | | | | |
| Tilt-frame or hoist truck | | | | |
| Mechanical sweeper | | | | |
| Bulldozers | | | | |
| Bucket loaders | | | | |
| Backhoes | | | | |
| Landfill Compactors | | | | |
| Agricultural tractors | | | | |
| Others | | | | |

The above data is for the year

5.2 Typical purchase price of the equipment in the recent years

| Equipment type | Purchase price | Purchase year |
|-------------------------------------|----------------|---------------|
| Compactor collector | | |
| Tipping truck with sliding covers | | |
| Open truck with tipping facility | | |
| Open truck without tipping facility | | |
| Tilt-frame or hoist truck | | |
| Mechanical sweeper | | |
| Bulldozer | | |
| Landfill compactor | | |
| Agricultural tractor | | |
| Others (specify) | | |
| Others (specify) | | |

The above data is for the year

5.3 Does your city have its own weighbridge for MSWM?

- ☐ Yes
 ☐ No
☐ Yes, but out of order

If yes, please fill-in the following:

| | |
|------------------------|--|
| Number of weighbridges | |
| Capacity (Metric ton) | |
| Year of purchase | |
| Purchase price | |

5.4 Does your city have the laboratory for environmental monitoring?

☐ Yes ☐ No

If you answer enough, please fill out below table about the equipment and staff of your laboratory.

| Measure for | Number of Equipment | Number of Staff |
|------------------------------|---------------------|-----------------|
| BOD | | |
| COD | | |
| Concentration of Mercury | | |
| Concentration of Lead | | |
| Concentration of Arsenic | | |
| Concentration of Methane Gas | | |

The above data is for the year

6 Physical characteristics of the solid waste

6.1 Is the data available?

☐ Yes ☐ No

6.2 If yes, please fill-in the following:

The data in the following table refers to year:

Analysed/estimated by:

| Component | % by weight |
|-----------------------|-------------|
| Paper | % |
| Plastic and rubber | % |
| Organic or vegetables | % |
| Glass and ceramic | % |
| Metal | % |
| Wood | % |
| Textile | % |
| Others | % |
| Total | 100.00% |

7 Storage and collection

7.1 Domestic waste collection service coverage (population receiving the service)

Urbanised area:%

Rural area:%

7.2 Commercial & Institutional wastes collection coverage (measured as percentage of total weight of the commercial and institutional waste produced) /

Direct municipal collection:%

Private collectors contracted by city:%

Collection arranged by generators:%

7.3 Collection frequency of domestic, institutional and commercial wastes

| Frequency | Approximate percentage of waste collected | |
|-----------------------|---|----------------------------|
| | Domestic (Urban) | Institutional & commercial |
| Twice per day or more | % | % |
| 7 times per week | % | % |
| 6 times per week | % | % |
| 3 to 5 times per week | % | % |
| 2 times per week | % | % |
| Once a week | % | % |
| Irregular | % | % |
| Total | 100 % | 100 % |

7.4 Quantity collected by the Council (direct or through contract): If data is not available by the type of waste, please mention the total.

| Waste type | Quantity collected | | | |
|--|--------------------|-----------|-------------------------|-----------|
| | (Metric Ton/month) | | (Cubic metre per month) | |
| | Measured | Estimated | Measured | Estimated |
| Domestic, institutional and commercial waste | | | | |
| Industrial waste | | | | |
| Waste from street/park cleansing | | | | |
| Waste from drain cleansing | | | | |
| Construction waste | | | | |
| Bulky waste | | | | |
| Others | | | | |
| Total | | | | |

The above data refers to year/period

7.5 Does your city have the operation manual for storage and collection?

☐ Yes ☐ No

If you answer yes, please describe the year of enactment _____

7.6 Chart of solid waste flow

Please attach the flow chart from generation of solid waste to final disposal.

8 Final disposal

8.1 General information

| | Disposal site | | |
|------------------|---------------|--------|--------|
| | Site 1 | Site 2 | Site 3 |
| Name of the site | | | |
| Year of start | | | |

| | | | |
|--------------------------------|------------|------------|------------|
| Area | ha | ha | ha |
| Remaining life | Yrs | yrs | yrs |
| Amount disposed off daily | t/d | t/d | t/d |
| Distance to the site | Km | km | km |
| Disposal method (see footnote) | O, C, S, D | O, C, S, D | O, C, S, D |
| Frequented by animals for food | Yes / No | Yes / No | Yes / No |
| Existence of scavengers | Yes / No | Yes / No | Yes / No |
| Existence of open burning | Yes / No | Yes / No | Yes / No |

The above data refers to year

Note: O = Open dumping;; C = Controlled tipping(with sporadic cover); S= Sanitary landfill (with daily cover); D = Dumping into water body

8.2 Details

8.2.1 Number of Landfill Sites according to the distance from collection area (please tick)

| Distance (Km) | Disposal site | | |
|-----------------|---------------|--------|--------|
| | Site 1 | Site 2 | Site 3 |
| 0 - 5 Km | | | |
| 5.1 – 10 Km | | | |
| 10.1 – 15 Km | | | |
| 15.1 – 20 Km | | | |
| More than 20 Km | | | |

8.2.2 Present condition of Landfill Sites (please tick)

| | Disposal site | | |
|-------------------------|---------------|--------|--------|
| | Site 1 | Site 2 | Site 3 |
| Sanitary landfill | | | |
| Controlled tipping | | | |
| Open dumping | | | |
| Dumping into water body | | | |

8.2.3 Location of the Landfill Site (please tick)

| | Disposal site | | |
|---------------------|---------------|--------|--------|
| | Site 1 | Site 2 | Site 3 |
| River side | | | |
| Swamp | | | |
| Flat ground | | | |
| Mountain area | | | |
| Abandoned mine site | | | |
| Sea side | | | |
| Others | | | |

8.2.4 Availability of facilities in landfill sites (please tick)

| | Disposal site | | |
|-----------------------------|---------------|--------|--------|
| | Site 1 | Site 2 | Site 3 |
| Office in the site | | | |
| Electricity | | | |
| Water supply | | | |
| Telephone | | | |
| Access road in sites | | | |
| Fence for boundary | | | |
| Boundary bund | | | |
| Gate | | | |
| Notice board | | | |
| Material to cover waste | | | |
| Gas venting pipe | | | |
| Rain water drain | | | |
| Leachate collection pipe | | | |
| Oxidation pond | | | |
| Weighbridge | | | |
| Leachate treatment facility | | | |

8.2.5 Cover materials (please tick): If the breakdown is not possible, please fill-in the total

| | Disposal site | | |
|-------------------------|---------------|--------|--------|
| | Site 1 | Site 2 | Site 3 |
| In site | | | |
| Outside the site (free) | | | |
| Purchased | | | |
| Total | | | |

8.2.6 Quality of Leachate

| Item | Disposal site | | |
|------------------------|---------------|--------|--------|
| | Site 1 | Site 2 | Site 3 |
| PH | | | |
| Suspended Solid (mg/l) | | | |
| BOD (mg/l) | | | |
| COD (mg/l) | | | |

8.2.7 Gas Quality

Concentration of CH₄:%

8.2.8 Does your city have the operation manual for Landfill?

☐Yes ☐No

If you answer yes, please describe the year of enactment _____

8.2.9 Geological Data of Landfill

Please send us geological data of the landfill sites

8.2.10 Area Map, Plans of Landfill

Please send us area map, plan, cross section and topography of the landfill sites

9 Foreign Aid

9.1 Did / Does your city receive any aid from foreign country or international organization in the field of Municipal Solid Waste Management? (except Japanese government including JICA)

☐Yes ☐No

If you answer yes, please describe the year of enactment _____

9.2 If you answer Yes in 9.1, please fill out the follow table.

| Name of Country / Organization | Period | Contents of Aid (equipment / facility / others) |
|--------------------------------|--------|--|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

- 10 **Problems encountered in the Solid Waste Management:** What are the main problems the Council is facing the management of the waste produced in the city? Please tick the appropriate spaces in the following list:

10.1 **Problems of landfill site:**

| | Serious | Not so Serious | No Problem |
|------------------------|---------|----------------|------------|
| Ground water pollution | | | |
| Leachate | | | |
| Water pollution | | | |
| Cover material | | | |
| Littering | | | |
| Open dumping | | | |
| Odour | | | |
| Air pollution | | | |
| Noise | | | |
| Scavenger | | | |
| Fly | | | |
| Birds | | | |

10.2 **Problems in solid waste management**

| | Serious | Not so Serious | No Problem |
|--|---------|----------------|------------|
| Difficult to acquire landfill | | | |
| Obsolete equipment / too frequent breakdown | | | |
| Limited co-operation from the public | | | |
| Uncontrolled use of packaging materials | | | |
| Proliferation of squatter areas | | | |
| Financial resource shortage | | | |
| Lack of enforcement measures | | | |
| Shortage of equipment | | | |
| Too rapid an urbanisation outpacing service delivery capacity | | | |
| Development projects without due consideration to solid waste management | | | |
| Hazardous waste | | | |
| Lack of short, medium and long-term plan of the service | | | |
| Inappropriate institutional set-up of public cleansing service | | | |
| Lack of qualified private contractors | | | |
| Lack of trained personnel | | | |
| Lack of authority for design-making | | | |
| Lack of standardisation of equipment | | | |
| Limited co-operation from the government | | | |
| Deficient service coverage | | | |
| Difficulty in managing of contracted out services | | | |
| Lack of legislation | | | |
| Labour conflicts | | | |
| Deficient service quality | | | |

Table 1: Relationship Between Factors Affecting Environment Impact and Items Under Survey-Forecasting and Evaluation

| Forecasting evaluation items (environmental element) | | Type of pollution to control | | | | Type of natural environment to preserve | | | | | | |
|---|---|------------------------------|-------|-------|-----------|---|-----------------------------|--------|---------|-----------------|-----------------------|--------|
| Factors affecting Environmental impact | | Air | Water | Noise | Vibration | Odour | Land form and geology | Plants | Animals | Vista/ Sight | Outdoor recreation | Others |
| Construction of Sanitary landfill System | Movement of machinery Movement of vehicle Replanting, change in Flow movement | | | | | | | | | | | |
| | Landfilling of waste | | | | | | | | | | | |
| Ultimate Landuse site | Leachate discharge | | | | | | | | | | | |